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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/363,578	07/29/1999	JAE-YUL RYU	003364.P020	8304

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EXAMINER
RUTHKOSKY, MARK

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 10/03/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/363,578

Applicant(s) **YP 17**

RYU ET AL.

Examiner

Mark Ruthkosky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Summary

1. Claims 1-6 are pending.

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuribayashi et al. ("Battery Characteristics with Various Carbonaceous Materials," *Journal of Power Sources* 54 (1995) 1-5), as supported by Sax et al. (Hawley's Condensed Chemical Dictionary.)

The instant claims are to a carbonaceous active material for a lithium secondary battery comprising a crystalline, graphite core and an amorphous shell surrounding the graphite core. Differential thermal analysis displays two overlapping, exothermic peaks which form shoulders. The amorphous carbon precursor is selected from coal pitch, petroleum pitch, coal-based oil, and heavy oil.

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Kuribayashi et al. teaches a lithium secondary battery which comprises particles with a graphite core surrounded by an amorphous carbon shell. The particles have a graphite structural part and a amorphous type part (see page 1, lines 10-end). The shell is comprised of a coke-like carbon (page 1, col. 2, lines 10-15.) Example 1 and paragraph 1 on page 5 teaches the shell to be pitch-blended phenol resins. The mixture is also a solid solution. Differential thermal analysis is a means for analyzing the carbon materials. Differential thermal analysis is not discussed in the Kuribayashi et al. reference, however, the properties indicated by differential thermal analysis would be inherent. The carbonaceous material would have two, separate, inherent, exothermic peak values based on the graphite material and the non-graphite material. The instant specification does not describe specific graphite and amorphous materials. See, for example, page 5, where it is noted that natural or artificial graphite may be used and various amorphous carbons serve as the other carbon material. Thus, the graphite and carbon core materials will inherently have two specific peaks by DTA.

Kuribayashi et al. does not teach the amorphous carbon precursor is selected from coal pitch, petroleum pitch, coal-based oil, and heavy oil, however, it is noted that coke is defined as being the carbonaceous material distilled from coal-tar pitch, petroleum, and coal. Thus, coke is inherently an amorphous carbon material from these precursors.

4. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al. (5,908,715.)

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Liu et al. (5,908,715) teaches comprises particles for use as anodes in lithium secondary batteries. The particles have a graphite structural core surrounded by an amorphous carbon shell (col. 4, lines 10-23.) The examples show the coating derived from epoxy resin solutions, alcohol solutions, and aniline solutions (examples 1-3.) The teachings of Liu also show that a nongraphitic carbon material may be produced from petroleum or coal pitch (col. 3, line 49 to col. 4, line 5, specifically see col. 4, lines 52-57.) Differential thermal analysis is a means for analyzing the carbon materials. Differential thermal analysis is not discussed in the Kuribayashi et al. reference, however, the properties indicated by differential thermal analysis would be inherent. The carbonaceous material would have two, separate, inherent, exothermic peak values based on the graphite material and the non-graphite material. The instant specification does not describe specific graphite and amorphous materials. See, for example, page 5, where it is noted that natural or artificial graphite may be used and various amorphous carbons serve as the other carbon material. Thus, the graphite and carbon core materials will inherently have two specific peaks by DTA.

Response to Arguments

5. Applicant's arguments with respect to claims 1-6 have been considered but are not persuasive. The amendment to the claims state that the amorphous carbon shell coating is derived from an amorphous carbon precursor solution selected from coal pitch, petroleum pitch, coal-based oil, and heavy oil. It is noted that the coatings of the prior art references are

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amorphous materials coated on graphite cores. In Kuribayashi, the shell is coke-like which is known in the art to not have a graphite structure and is therefore amorphous. In Liu, the shell is a non-graphitizable carbon material and is therefore amorphous. In each reference, coatings are shown to be derived from an amorphous carbon precursor solution of either coke or petroleum and coal pitch as noted in the rejections. As such, the claims are anticipated.

Examiner Correspondence

6. Any inquiry regarding this communication or a previous communication should be directed to Examiner Mark Ruthkosky, whose telephone number is (703) 305-0587 or his supervisor, Patrick Ryan, whose telephone number is (703) 308-2383. Please note that Examiner Ruthkosky is out of the office the first Friday of each bi-week period. The technology center fax number is 703-872-9310, while the after-final fax number is 703-872-9311.

MARK RUTHKOSKY
PATENT EXAMINER
ART UNIT 1745
Mark Ruthkosky
9/26/02